What Is Claimed Is:

1. An improved bell atomizer for use in electrostatic applications having a bell housing and an aluminum bell cup, the improvement comprising:

a coating formed on a surface of the aluminum bell cup.

2. The bell atomizer according to claim 1, wherein said coating comprises a wear resistant coating.

3. The bell atomizer according to claim 2, wherein said wear resistant coating comprises a silicon-doped amorphous carbon coating.

4. An improved bell atomizer for use in electrostatic applications having a bell housing and a titanium bell cup, the improvement comprising:

an adhesion promoter applied to a surface of the titanium bell cup; and

a coating formed on said adhesion promoter.

5. The bell atomizer of claim 4, wherein said adhesion promoter comprises a layer of sputtered chrome.

6. The bell atomizer according to claim 4, wherein said coating comprises a wear resistant coating.

7. The bell atomizer according to claim 6, wherein said wear resistant coating comprises a silicon-doped amorphous carbon coating.

8. A method for improving wear resistance of the outer surface of an aluminum bell cup, the method comprising the steps of:

preparing the outer surface of the aluminum bell cup;

applying a wear resistant coating to said outer surface.

9. The method according to claim 8, wherein the step of preparing the outer surface of the aluminum bell cup comprises the steps of:

cleaning said outer surface;

etching said outer surface;

rinsing said outer surface;

drying said outer surface; and

atomically cleaning said outer surface.

10. The method according to claim 9, wherein the step of cleaning said outer surface comprises the steps of:

cleaning said outer surface with a soap solution;

cleaning said outer surface with water; and

cleaning said outer surface with solvent.

11. The method according to claim 9, wherein the step of etching said outer surface comprises the steps of:

etching said outer surface with a 5% solution of sodium hydroxide for a predetermined time;

rinsing said outer surface with water; and

etching said outer surface with a 1% nitric acid solution for a second predetermined time under ultrasonic agitation.

12. The method according to claim 9, wherein the step of drying said outer surface comprises the step of:

blow drying said outer surface with air; and

placing the aluminum bell cup in a vacuum pressure chamber for a predetermined time at a predetermined pressure.

13. The method according to claim 9, wherein the step of atomically cleaning said outer surface comprises the steps of:

atomically cleaning said outer surface by argon bombardment at 200 volts;

atomically cleaning said outer surface by argon bombardment at 500 volts; and

atomically cleaning said outer surface by argon bombardment at 200 volts.

14. The method according to claim 8, wherein the step of applying a wear resistant coating to said outer surface comprises the steps of:

placing the aluminum bell cup in a chamber containing a power source and a gaseous mixture of hydrocarbons and silicon-doped hydrocarbons;

applying a predetermined frequency and voltage bias from said power source for a predetermined time to coat the aluminum bell cap to a predetermined film thickness at a predetermined silicon composition.

15. The method according to claim 14, wherein the step of placing the aluminum bell cup in a chamber containing a power source and a gaseous mixture of hydrocarbons and silicon-doped hydrocarbons comprises the step of:

placing the aluminum bell cup in a chamber containing a power source and a gaseous mixture of methane and tetramethylsilane.

16. A method for improving wear resistance of the outer surface of a titanium bell cup, the method comprising the steps of:

preparing the outer surface of the titanium bell cup;

applying an adhesion promoter coating to the outer surface;

applying a wear resistant coating to the adhesion promoter coating

17. The method according to claim 16,. wherein the step of preparing said outer surface of the titanium bell cup comprises the steps of:

cleaning said outer surface;

etching said outer surface;

rinsing said outer surface;

drying said outer surface; and

atomically cleaning said outer surface.

18. The method according to claim 17, wherein the step of cleaning said outer surface comprises the steps of:

cleaning said outer surface with a soap solution;

cleaning said outer surface with water; and

cleaning said outer surface with solvent.

19. The method according to claim 17, wherein the step of etching said outer surface comprises the steps of:

etching said outer surface for a predetermined time in a 3% nitric acid in ethanol solution under ultrasonic agitation;

rinsing said outer surface with water; and

immersing the titanium bell cup in ethanol for a second predetermined time under agitation.

20. The method according to claim 17, wherein the step of drying said outer surface comprises the step of:

blow drying said outer surface with air; and

placing the titanium bell cup in a vacuum pressure chamber for a predetermined time at a predetermined pressure.

21. The method according to claim 17, wherein the step of atomically cleaning said outer surface comprises the steps of:

atomically cleaning said outer surface by argon bombardment at 200 volts;

atomically cleaning said outer surface by argon bombardment at 500 volts; and

atomically cleaning said outer surface by argon bombardment at 200 volts.

22. The method according to claim 16, wherein the step of applying an adhesion promoter coating to said outer surface comprises the step of sputtering a layer of chrome on said outer surface to a predetermined thickness.

23. The method according to claim 16, wherein the step of applying a wear resistant coating to said adhesion promoter comprises the steps of:

placing the titanium bell cup in a chamber containing a power source and a gaseous mixture of hydrocarbons and silicon-doped hydrocarbons;

applying a predetermined frequency and voltage bias from said power source for a predetermined time to coat the titanium bell cap to a predetermined film thickness at a predetermined silicon composition.

24. The method according to claim 23, wherein the step of placing the titanium bell cup in a chamber containing a power source and a gaseous mixture of hydrocarbons and silicon-doped hydrocarbons comprises the step of:

placing the titanium bell cup in a chamber containing a power source and a gaseous mixture of methane and tetramethylsilane.